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Construction of an Intensive Training Program for Badminton Reserve Players Before Team Selection Match

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Abstract

Background and Aim: This research was an intensive training program for badminton reserve players to select matches. The objective was to 1) construct an intensive training program for badminton reserve players before team selection matches,2) study the effect of an intensive training program for badminton reserve players before team selection matches on physical fitness and badminton skills, 3) compare physical fitness and badminton skill within the experimental group between the pre-test, after week 4, and post-test, and 4) to compare badminton skills and mental fitness between pre-match and post-match competitions.

Materials and Methods: This quasi-experimental research involved the purposive sampling method of 26 youth badminton members from the Dongguan Xianghong Badminton Club in Guangzhou, dividing the subjects into specific events of badminton competition, such as men's singles, women's singles, men's doubles, women's doubles, and mixed doubles. The intensive training program was developed by the researcher, content validated with an index of item objective congruence (IOC) of 0.83, that with the first six weeks, they trained in technical, physical fitness, and strength training; in the last 2 weeks, they trained specific techniques and tactics, eight weeks duration, five days per week. All subjects were examined before training on the pre-match competition and mental fitness, then the pre-test on badminton skills and physical fitness. They conducted the training program, the test after week 4, and the post-test. In the final, they were examined on the post-match competition and mental fitness. Data analysis, the mean was compared between the pre-test, after week 4, and post-test with one-way ANOVA repeated measurement, and Bonferroni pairwise post hoc. The mean comparison of match competition between pre-match with post-match competition and mental fitness was conducted by t-test dependent.

Results: (1) Mean comparison between pre-match competitions and post-match, all badminton skills and mental fitness showed significant differences. (2) Mean comparison of badminton skills between pre-test, after weeks 4 and post-test, all of pairwise were significant differences. And (3) Mean comparison of physical fitness between the pre-test, after weeks 4 and post-test, all of pairwise were significant differences.

Conclusion: An intensive Training program for Badminton can improve badminton skills, physical fitness, and mental fitness for reserve players before a team selection match.

Keywords: Intensive Training Program; Badminton; Sports Talent Reserve; Before Mate Training

Introduction

Badminton, a sport known for its fast-paced rallies and strategic gameplay, requires players to possess exceptional skills, agility, and mental fortitude to succeed in competitive matches. In the realm of professional badminton, having a strong reserve player can be invaluable for a team's success. Reserve players often play a crucial role in filling gaps, providing rest for main players, and stepping in when needed during critical matches. However, developing a reserve player to perform optimally in selected match competitions requires careful planning, training, and strategic considerations.

In the competitive landscape of badminton, teams face various challenges, including injuries, fatigue, and the need for strategic substitutions. A reserve player serves as a vital asset for any team, offering depth and flexibility to the lineup. However, transitioning a reserve player into a successful competitor in selected match competitions demands a tailored approach.

Assessing the technical skills, physical fitness, and mental resilience of a reserve player provides valuable insights into areas for improvement. Research has shown that psychological resilience is positively related to personality traits and is important for reserve soldiers in the military (Kanapeckaite, et al, 2022). Additionally, the assessment of sport-specific technical skills is valuable for discriminating between skilled and less skilled individuals and predicting future performance in talent identification and development programs (Koopmann, et al, 2020). Furthermore, the adaptation of resilience scales for the sports field is a reliable and valid tool for measuring the resilience of elite athletes and can be

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used to measure psychological parameters related to sports (Olmo Extremera, et al., 2017). Biomechanical assessment methods have also been used to assess technical skills in talent research, with promising results (Hendricks, et al. (2019). Therefore, assessing technical skills, physical fitness, and mental resilience can provide valuable insights for improving performance in reserve players.

An intensive training program was key to enhancing the reserve player's performance, focusing on refining technical skills and physical conditioning. Studies have shown that high-intensity interval training (HIIT) can effectively enhance the physical conditioning of players, leading to beneficial adaptations in aerobic power and capacity (Hostrup & Bangsbo, 2023). Intensified training periods, which involve increasing the amount of HIIT while reducing volume at low-to-moderate intensity, have been found to overcome the risk of overload and enhance performance (Selmi, O., et al., 2022). Additionally, small-sided game training (SSG) has been shown to improve technical ability and agility, with greater enjoyment, while HIIT is more suitable for speed-based conditioning (Refoyo Román, et al, 2009). Therefore, a combination of HIIT and SSG training can be beneficial for reserve players, as it targets both physical conditioning and technical skills, leading to improved performance on the field. The intensive program should focus on refining technical skills, improving physical conditioning, and honing strategic awareness. Tailoring training sessions to simulate match conditions and incorporating situational drills could help the player develop confidence and composure during high-pressure situations. Furthermore, fostering a supportive team environment and providing opportunities for competitive exposure are essential elements in the reserve player's development journey. Encouraging healthy competition within the team and offering constructive feedback can motivate the player to continually strive for improvement.

In summary, developing a badminton reserve player to succeed in selected match competitions requires a comprehensive approach that addresses the technical, physical, and mental aspects of the game. By identifying strengths, implementing targeted training, and fostering a supportive team environment, teams can maximize the potential of their reserve players and enhance their overall competitiveness in the sport. Therefore, the researcher wanted to study whether an intensive training program before participating in the athlete selection competition could encourage athletes to qualify.

Objectives

1. To construct an intensive training program for badminton reserve players before team selection matches.
2. To study the effect of an intensive training program for badminton reserve players before team selection matches on physical fitness and badminton skills.
3. To compare the effects of an intensive training program for badminton reserve players before team selection matches on physical fitness and badminton skill within the experimental group between the pre-test, after week 4, and post-test.
4. To compare badminton skills and mental fitness between pre-match and post-match competitions.

Literature review

An intensive training program for badminton athletes has been developed to enhance their physical fitness, technical skills, tactical understanding, and mental fitness (Y., Du., Yubo, Fan., 2023). The program follows a periodized training model, incorporating elements of strength and conditioning, skill development, match simulation, and psychological training over a designated period (Bagas Satia Yuwana Putra, et al. (2023). Evaluation of the program includes physiological markers, performance assessments, and subjective feedback from participants (Estrada-Contreras, O., et al., 2023). Preliminary results indicate significant improvements in various aspects of player performance and overall well-being, suggesting the efficacy of the intensive training program (Cádiz Gallardo MP, Pradas de la Fuente F, Moreno-Azze A and Carrasco Páez L (2023).

Physical fitness: An intensive training program for badminton athletes should focus on improving physical fitness to enhance performance. Physical fitness is crucial for athletes as it allows them to perform at their highest ability in competitions. Training programs that incorporate speed, agility, and

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quickness (SAQ) exercises are effective in developing athletes' neuromuscular systems, improving movement efficiency, and increasing overall abilities (Majumdar, et al., 1997). Additionally, combining balance and plyometric training has shown promising results in improving dynamic balance and quickness performance in elite badminton athletes (Lu, et al, 2022). Monitoring training load is also important to avoid over-training and to ensure appropriate stress on the muscular and cardiovascular systems (Ilahil, et al, 2020)Therefore, an intensive training program for badminton athletes should include a combination of SAQ exercises, balance and plyometric training, and proper monitoring of training load to optimize physical fitness and enhance performance.

Technical and tactical skills: An intensive training program for badminton athletes should focus on developing technical skills and tactical understanding. Technical skills are crucial for performing well in badminton, as the sport requires quick and precise movements. The training program should include instruction in various technical skills, such as strokes and footwork, and provide opportunities for players to practice and improve these skills (Majumdar, et al., 1997; Karatnyk, et al, 2015). Additionally, tactical understanding is important for making strategic decisions during a match. Players should be taught different tactics and strategies for different game situations, and the training program should include game-based challenges to reinforce these tactical aspects (Liu, et al, 2020). By combining technical skills and tactical understanding, athletes can enhance their performance in badminton and improve their overall game (Timoftea & Titua, (2016).

Mental fitness: An intensive training program for badminton athletes can include mental fitness training to improve cognitive performance under pressure. The Cognitive Fitness Framework provides a consensus on the core dimensions of cognitive fitness, such as attention and cognitive control (Kusuma & Bin, 2017). Mental skills training programs, such as self-talk and mental imagery, have been shown to enhance badminton motor skills and self-confidence mastery (Cece, et al, 2020). Relaxation training has also been found to improve recovery from sports fatigue and fitness recovery during badminton (Jatmika & Linda 2016). These training programs can be implemented through various methods, including smartphone app-enhanced programs and periodized training plans (Arya & Kumar, 2015). The programs have shown positive outcomes on performance indicators, such as improvement in service efficacy and stroke quality, as well as the development of targeted mental skills like concentration and motivation (Aidman, E., et al,2022). Overall, incorporating mental fitness training into an intensive training program for badminton athletes can enhance their cognitive performance, motor skills, and recovery from fatigue.

In summary, an intensive training program for badminton athletes incorporates elements aimed at enhancing physical fitness, technical skills, tactical understanding, and mental fitness. The program, following a periodized training model, includes strength and conditioning, skill development, match simulation, and psychological training over a designated period. Evaluation methods include physiological markers, performance assessments, and subjective feedback from participants, with preliminary results indicating significant improvements in player performance and overall well-being.

Conceptual Framework

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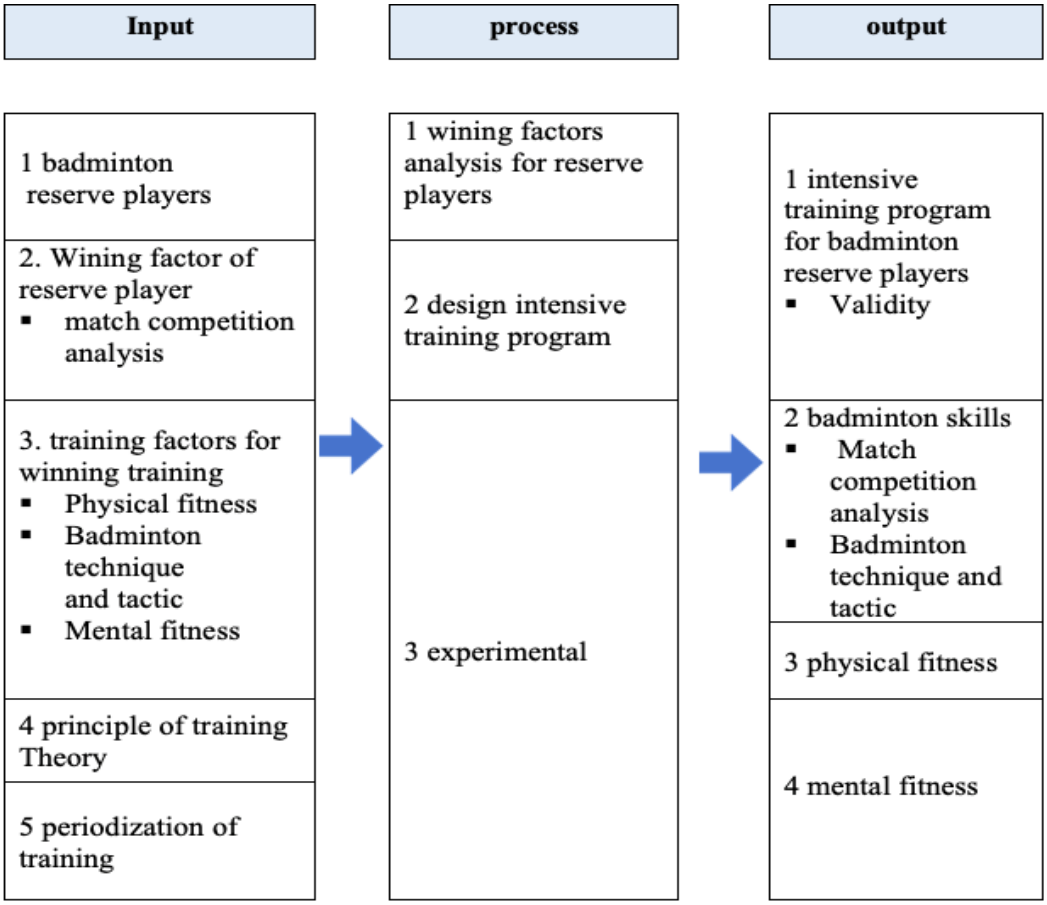

Figure 1 Conceptual framework

Methodology

Population and sampling

Population: The population consisted of 26 youth badminton reserve players from the four public schools in Dongguan City, Guangdong province, aged 12–14 years old. They were trained at the Red Badminton Club in Dongguan with over 3 years of game experience.

The subject was a purposive sampling of 26 youth badminton players who were trained at the Red Badminton Club in Dongguan. The inclusion criteria for participating in research projects follow this.

Inclusion criteria participation in research projects.

1. Be a badminton student of the Red Badminton Club in Dongguan, Guangdong Province, China, with a badminton technical background between the ages of 12 - 14 years and who were badminton reserve players.

2. Those who do not have any injuries that hinder training must get the approval of the doctor.

3. Those who have passed the Physical Activity Readiness Questionnaire for Everyone, PAR-Q+ 2023 assessment.

4. Be a person who voluntarily agrees to participate in the program and signs the consent document.

Exclusion criteria participants in research projects

1. There was less time to participate in the experiment during 80% of the eight-week training period.

2. Participants in the test were not completed by the date and time specified by the researcher.

3. Be sick or injured and unable to participate in further training.

4. They wanted to leave the research project.

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This research has passed the Research Ethics Review Committee of the Human Research Ethics Committee board, Bangkok Thonburi University. No. 214/2566, Date of issuance 19 November 2022

Research design: This study was quasi-experimental research with a repeated measurement design that conducted a pre-test with a mental fitness test and game analysis of pre-match competition, which first stimulated pre-match competition before pre-training, then subjects were examined for a pre-test (physical fitness test and badminton skill test), training, which was an intensive training program, and after week 4 and the post-test, they were examined for physical fitness, badminton skill, mental fitness test, and game analysis of post-match, as shown in the below table.

pretest		Training	After week 4	Training	posttest	
Pre-Match competition	O_1	T	O_2	T	O_3	Post-match competition
1.Mental fitness test 2.Game analysis(VDO)	Physical fitness test Skill test	Intensive Training program	Physical fitness test Skill test	Intensive Training program	Physical fitness test Skill test	1.Mental fitness test 2.Game analysis (VDO)

Results

From analyzing data to answering objective questions. The results of the research can be summarized as follows.

Table 1 Mean and standard deviation of physical fitness in the pre-test, after training 4, and post-test (n=26)

Variables	Pre-test	After week 4	post-test
	Mean + S.D.	Mean + S.D.	Mean + S.D.
Sit and reach (cm)	12.94±2.17	14.13±2.21	17.20±2.25
Sit up 60 sec (times)	42.10±1±2.08	43.96±2.31	47.85±2.81
Push up 60 sec (times)	19.50±4.05	20.92±4.07	24.23±4.21
Standing long jump (cm)	151.04±5.17	155.88±4.96	163.04±4.61
Run 40 meters (sec)	7.53±0.35	7.28±0.33	7.03±0.33
Multistage fitness test(ml/kg/min)	41.42±1.09	42.68±1.06	44.72±1.41

Table 1 found that the mean and standard deviation which were divided by pre-test, after weeks 4 and 8, sit and reached (12.94±2.17 cm, 14.13±2.21 cm, and 17.20±2.25 cm), sit up 60 sec(42.1±1±2.08, 43.96±2.31 and 47.85±2.81 times), push up 60 sec (19.50±4.05, 20.92±4.07 and 24.23±4.21 times), standing long jump (151.04±5.17, 155.88±4.96 and 163.04±4.61 cm), run 40 meters (7.53±0.35,7.28±0.33 and 7.03±0.33 sec), and multistage fitness test (41.42±1.09, 42.68±1.06 and 44.72±1.41 ml./kg./min).

Table 2 The comparison within the experiment group on physical fitness between the pre-test, after week 4, and post-test by One way of ANOVA Repeated measurement

Variables	Source of variant	Type III Sum of Squares	df	MS	F	p
Sit and reach	Week	250.14	2	125.07	25.600	.01*
	Error	366.41	75	4.88		
	total	616.55	77	129.95		

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Variables	Source of variant	Type III Sum of Squares	df	MS	F	p
Sit up for 60 sec	Week	444.95	2	222.47	38.01	.01*
	Error	439.00	75	5.85		
	total	883.95	77	228.32		
Push up 60 sec	Week	306.33	2	153.17	9.07	.01*
	Error	1266.96	75	16.89		
	total	1573.29	77	170.06		
Standing long Jump	Week	1895.08	2	947.54	39.16	.01*
	Error	1814.58	75	24.19		
	total	3709.66	77	971.73		
Run 40 m	Week	1895.08	2	947.54	39.16	.01*
	Error	1814.58	75	24.19		
	total	3709.66	77	971.73		
Multistage fitness test	Week	9.84	2	4.92	13.03	.01*
	Error	28.32	75	0.37		
	total	38.16	77	5.29		

*P< .05

Table 2 found that mean comparisons within the experiment group on all physical fitness showed that the least one compared had a significant difference.

Table 3 Pairwise comparisons of physical fitness by Bonferroni

Variable	Test	Pre-test	After weeks 4	post-test
Sit and reach	Pre-test	XXX	-1.18	-4.25*
	After weeks 4		XXX	-3.07*
	post-test			XXX
Sit-up 60-sec	Pre-test	XXX	-1.85*	-5.73*
	After weeks 4		XXX	-3.88*
	post-test			XXX
Push up 60 sec	Pre-test	XXX	-1.42	-4.73*
	After weeks 4		XXX	-3.31*
	post-test			XXX
Standing long jump	Pre-test	XXX	-4.85*	-12.00*
	After weeks 4		XXX	-7.15*
	post-test			XXX
Run 40 m	Pre-test	XXX	0.25*	0.50*
	After weeks 4		XXX	0.25*
	post-test			XXX
Multistage fitness test	Pre-test	XXX	-1.27*	-3.30*
	After weeks 4		XXX	-2.03*
	post-test			XXX

*P<.05

Table 3 found that all physical fitness variables pairwise showed significant differences. Except for sit and reach and push up 60 seconds in the pre-test after week 4, there was no significant difference.

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Table 4 Mean and standard deviation of badminton skills, pre-test, after week 4, and post-test

Variables	Pre-test	After week 4	post-test
	Mean+S.D.	Mean+S.D.	Mean+S.D.
Clear shots (score)	2.42±0.81	4.69±0.84	6.96±0.72
Smash shots (score)	2.27±0.83	4.73±0.78	6.31±0.84
Short Service(score)	2.85±0.73	5.23±0.71	6.50±0.70
Long service(score)	3.81±0.69	5.81±0.63	7.00±0.80
Drop shots (score)	2.69±0.62	4.85±0.67	6.19±0.63
Net shots (score)	3.77±0.76	5.58±0.70	6.92±0.84
Lift (score)	2.38±0.64	4.04±0.66	5.38±0.70

From table 4 found that the mean and standard deviation were divided into pre-test, after week 4, and post-test, clear shot (2.42±0.81, 4.69±0.84 and 6.96±0.72), smash shot (2.27±0.83,4.73±0.78 and 6.31±0.84), short service (2.85±0.73, 5.23±0.71 and 6.50±0.70), long service (3.81±0.69, 5.81±0.63 and 7.00±0. 80), drop shot (2.69±0.62, 4.85±0.67 and 6.19±0.63), net shot (3.77±0.76, 5.58±0.70 and 6.92±0.84) and lift (2.38±0.64, 4.04±0.66 and 5.38±0.70).

Table 5 The mean comparison within the experimental group on badminton skills between the pre-test, after week 4, and post-test by one-way ANOVA repeated measurement

Variables	Source of variant	Type III Sum of Squares	df	MS	F	p
Clear shots	Week	267.77	2	133.89	214.35	.01*
	Error	48.85	75	0.63		
	total	314.62	77	134.52		
Smash shots	Week	215.41	2	107.71	162.31	.01*
	Error	49.77	75	0.66		
	total	265.18	77	108.37		
Short Service	Week	178.95	2	89.47	174.30	.01*
	Error	38.50	75	0.51		
	total	217.45	77	89.98		
Long service	Week	135.31	2	67.65	133.26	.01*
	Error	38.08	75	0.51		
	total	173.39	77	68.16		
Drop shots	Week	162.08	2	81.04	196.30	.01*
	Error	30.96	75	0.41		
	total	193.04	77	81.45		
Net shots	Week	130.23	2	65.11	108.99	.01*
	Error	44.81	75	0.60		
	total	175.04	77	65.71		
Lift	Week	117.41	2	58.71	132.34	.01*
	Error	32.27	75	0.44		
	total	150.68	77	59.15		

*P< .05

Table 5 found that of all badminton skills, the least one compared had a significant difference.

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Table 6 Pairwise comparisons of badminton skills by Bonferroni

Variables	Test	Pre-test	After weeks 4	post-test
Clear shots	Pre-test	XXX	2.27*	4.53*
	After weeks 4		XXX	2.26*
	post-test			XXX
Smash shots	Pre-test	XXX	2.46*	4.04*
	After weeks 4		XXX	1.58*
	post-test			XXX
Short Service	Pre-test	XXX	2.38*	3.65*
	After weeks 4		XXX	1.27*
	post-test			XXX
Long Service	Pre-test	XXX	2.00*	3.19*
	After weeks 4		XXX	1.19*
	post-test			XXX
Drop shots	Pre-test	XXX	2.15*	3.50*
	After weeks 4		XXX	1.35*
	post-test			XXX
Net shots	Pre-test	XXX	1.81*	3.15*
	After weeks 4		XXX	1.35*
	post-test			XXX
lift	Pre-test	XXX	1.65*	3.00*
	After weeks 4		XXX	1.35*
	post-test			XXX

*P<.05

From Table 6, all pairwise post-hoc, pre-test after week 4, pre-test with post-test, and after week 4 with post-test were significantly different.

Table 7 Mean comparison between pre-match and post-match competition of badminton skills with t-test dependent (n=26)

Skill	Game	Mean+SD	D	t	p
Clear shots	Pre-match	4.29±1.69	-1.76	-3.17	.01*
	Post-match	6.06±1.56			
Smash shots	Pre-match	6.12±1.50	-2.29	-4.66	.01*
	Post-match	8.41±1.37			
Shot Service	Pre-match	20.23±17.75	-2.35	-4.23	0.68
	Post-match	22.82±17.89			
Long service	Pre-match	22.24±17.48	-2.35	-0.36	0.72
	Post-match	24.59±20.38			
Drop shots	Pre-match	3.53±1.55	-1.47	-2.82	.01*

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Skill	Game	Mean+SD	D	t	p
	Post-match	5.00±1.50			
Net shots	Pre-match	3.12±1.11	-1.294	-3.38	.01*
	Post-match	4.41±1.12			

*P<.05

Table 7 found that for clear shots, smash shots, drop shots, and net shots, there were significant differences. But short service and long service had no significant differences.

Table 8 The mean compared on the Competitive State Anxiety Inventory-2 was divided into cognitive state anxiety (CSA), somatic state anxiety (SSA), and self-confidence (SC) by t-test dependence (n=26).

Variables	Match1 Mean+SD	Match2 Mean+SD	D	t	p
CSA	24.08±1.47	19.12±1.51	4.96	12.03	.01*
SSA	22.81±2.48	18.85±1.54	3.97	6.91	.01*
SC	19.31±1.57	23.96±1.46	-4.65	-11.09	.01*

*P<.05

Table 8 found that CSA, SSA, and SC were significantly difference

Discussion

Form results found that pre and post-match badminton competition, badminton skill (clear shots, smash shots, drop shots, and net shots), and mental fitness post-match were better than pre-match.
It was like this because the effectiveness of the intensive training program stems from several factors. These include its focus on enhancing physical fitness, badminton skills, and mental fitness through a well-structured regimen characterized by validity, intensity, volume, and recovery times. These aspects align with established principles of training theory and periodization, as noted by Bompa & Haff (2009). Many studies sport this result such as

The post-match improvement in badminton skills compared to pre-match performance was a result of enhanced physical fitness, allowing athletes to demonstrate their skills more proficiently (Walankar & Shetty, 2023; Lin, Z., et al, 2023). This improvement can be attributed to the effects of plyometric exercises and speed agility quickness (SAQ) training, which were found to be equally effective in improving speed and agility in badminton players (Albayatii & Kaya, 2022). Additionally, strength training was found to significantly improve the physical fitness of badminton players, particularly in terms of explosive power and muscle contraction (Araujo, et al, 2021). These training protocols can be used as evidence-based approaches to improve skills in badminton players for optimal performance (Biao & Lu, 2023). The increase in performance can also be influenced by psychological factors, such as increased confidence in their ability to perform well.

By the way competitive state anxiety cognitive state anxiety (CSA) and somatic state anxiety (SSA) were decreased and self-confidence was increased. Competitive State Anxiety (CSA) and somatic state anxiety (SSA) were found to decrease, while self-confidence was found to increase, leading to higher performance skills (Barrett, E., et al., 2023; Amaro & Brandão, 2023 and Chun, D.-R., et al., 2023). The relationship between cognitive anxiety and somatic anxiety with self-confidence was found to be positive, indicating that higher levels of cognitive and somatic anxiety were associated with lower self-confidence (Mun-Gyu, et al, 2023). However, metacognitive processes were negatively related to cognitive and somatic state anxiety, suggesting that athletes who had better metacognitive beliefs and processes experienced lower levels of anxiety (Mercader-Rubio, et al, 2023). Emotion regulation, personality traits, and self-management behaviors were also found to influence competitive anxiety and concentration levels in athletes. Overall, these findings suggest that managing mental

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health, adopting effective emotion regulation strategies, and developing positive metacognitive beliefs and processes can contribute to reducing anxiety and increasing self-confidence, leading to improved performance skills in athletes.

Conclusion

The intensive training program for badminton included tactics, technique badminton skills, and physical and mental fitness training to improve cognitive performance under pressure. An intensive training program for Badminton can improve badminton skills, physical fitness, and mental fitness for reserve players before a team selection match.

Recommendation

1. Given the technical differences of each athlete, it is suggested to strengthen personalized technical guidance and carry out targeted training for the weaknesses of each athlete, to comprehensively improve the technical level. Introduce more practical simulation training, through the simulation of competition scenarios, to help athletes to better apply the technology learned from the training to the actual competition.

2. Develop differentiated training plans according to each athlete's physical fitness level, emphasizing individual differences to make the training more suitable to the needs of each athlete. Emphasis on comprehensive physical training, including the comprehensive improvement of endurance, strength, and flexibility, to comprehensively improve the physical quality of athletes.

3. Adjust the tactical strategies of the athletes according to the technical statistical results of the competition, pay attention to the flexible use of different technical means in the competition, and improve the ability to deal with various scenarios. Emphasize the cultivation of psychological quality, including the strain ability in the competition, to improve the performance level of athletes at the critical moment.

4. Regularly evaluate the athletes' skills, physical performance, and competition performance, and adjust the training plan according to the evaluation results to ensure the continuity and effectiveness of the training. Encourage team cooperation, and establish an effective feedback mechanism, so that the coaches, the athletes, and the team to form a close cooperation relationship, and jointly promote the progress of the training.

5. In the next study, should study cognitive training for badminton in youth badminton players to increase their ability to perceive and respond, which affects their ability to evaluate game situations.

References

Aidman, E., Fogarty, G.J., Crampton, J., Bond, J., Taylor, P., Heathcote, A., & Zaichkowsky, L. (2022). An app-enhanced cognitive fitness training program for athletes: The rationale and validation protocol. *Frontiers in Psychology*, 13(1), 1-15. doi: 10.3389/fpsyg.2022.957551.

Albayatii, M.A.K., & Kaya, Y. (2022). The effect of 12-week different training methods applied to badminton athletes on some basic motoric properties. *European Journal of Fitness, Nutrition, and Sport Medicine Studies*, 3(1), 139. https://doi.org/10.46827/ejfnsm.v3i1.139.

Amaro, R., & Brandão, T. (2023). Competitive anxiety in athletes: Emotion regulation and personality matter. *Kinesiology*, 55(1), 108-119. DOI: 10.26582/k.55.1.12.

ARAUJO, G.H.O., FIGUEIREDO, D.H., FIGUEIREDO, D.H., KAUFFMAN, A.P., PESERICO, C.S., MACHADO, F.A. (2021). Carry a new treinamento, tolerância, estresse and desempenho durante the temperature of jogadores brasileiros in Badminton sub-19. *In: 44 Internacional de Ciências do Esporte e 4 Internacional de Atividade Física and Comportamento Sedentário, 2021*, São Caetano do Sul - online. 44 Internacional schools in Esporte and 4 Internacional schools in 2021.

Arya, D., & Kumar, S. (2015). Relationship between psychological skills and badminton skills performance. *International Journal of Physical Education, Sports and Health*, 2(1), 288-290.

Bagas Satia Yuwana Putra, M., Yunus, M., Fhadhli, R., & Roesdiyanto. (2023). Level Kemampuan Fisik Atlet Pb. Bat (Badminton Academy Training) Under 15 Tahun Kota Malang. *Sport Science and Health*, 5(3), 290–299. https://doi.org/10.17977/um062v5i32023p290-299.

Citation
Chen. T.F., Tongdecharoen, W., & Tasnaina, N. (2024). Construction of an Intensive Training Program for Badminton Reserve Players Before Team Selection Match. International Journal of Sociologies and Anthropologies Science Reviews, 4 (4), 175-186; DOI: https://doi.org/10.60027/ijsasr.2024.4371

Barrett, E., Kannis-Dymand, L., Love, S., Ramos-Cejudo, J., & Lovell, G.P. (2023). Sports specific metacognitions and competitive state anxiety in athletes: A comparison between different sporting types. *Applied Cognitive Psychology*, 37(1), 1–12. https://doi.org/10.1002/acp.4040.

Biao, Z., & Lu, X. (2023). Influence of strength training on physical fitness of badminton players. *Revista Brasileira de Medicina do Esporte*, 29, e2023_0062. https://doi.org/10.1590/1517-8692202329012023_0062.

Bompa, T.O., & Haff, G.G. (2009). Periodization: Theory and methodology of training. 5th edition. Champaign, IL: Human Kinetics.

Cádiz Gallardo, M.P., Pradas de la Fuente, F., Moreno-Azze, A., & Carrasco Páez, L. (2023) Physiological demands of racket sports: a systematic review. *Frontiers in Psychology*, 14, 1149295. doi: 10.3389/fpsyg.2023.1149295

Cece, V., Guillet-Descas, E., & Martinent, G. (2020). Mental training program in racket sports: A systematic review. *International Journal of Racket Sports Science*, 2(1), 55-71. Retrieved from https://journal.racketsportscience.org/index.php/ijrss/article/view/24

Chun, D.-R., Lee, M.-Y., Kim, S.-W., Cho, E.-Y., & Lee, B.-H. (2023). The mediated effect of sports confidence on competitive state anxiety and perceived performance of basketball game. *International Journal of Environmental Research and Public Health*, 20(1), 1-14. https://doi.org/10.3390/ijerph20010334.

Du, Y., & Fan, Y. (2023). The effect of fatigue on postural control and biomechanical characteristic of lunge in badminton players. *Bioengineering*, 10(3), 1-12. https://doi.org/10.3390/bioengineering10030301.

Estrada-Contreras, O., Fernández Martínez, N., Pérez-Córdoba, E., Cantón Chirivella, E., Jodra Jiménez, P., & Huertas Castro, E. (2023). La activación psicofisiológica en situaciones de competición en jugadores de bádminton. *Cuadernos de Psicología del Deporte*, 23(2), 106-117.

Hendricks, S., Till, K., Oliver, J.L., et al. (2019). Rating of perceived challenge as a measure of internal load for technical skill performance. *British Journal of Sports Medicine*, 53(10), 611-613.

Hostrup, M., & Bangsbo, J. (2023). Performance adaptations to intensified training in top-level football. *Sports Medicine*, 53(10), 577–594. https://doi.org/10.1007/s40279-022-01791-z.

Ilahil, B.R., Hadiwinarto, H., & Oktaria, S.D. (2020). Evaluation of the Physical Training Program of the Badminton Achievement Club in Bengkulu City. *Kinestetik: Jurnal Ilmiah Pendidikan Jasmani*, 4(2), 150-157.

Jatmika, D., & Linda, L. (2016). The effectiveness of anxiety management training on competitive anxiety in adolescent badminton athletes. *Journal of Psikologi Psibernetika*, 9(2),102-112. DOI: http://dx.doi.org/10.30813/psibernetika.v9i2.462

Kanapeckaitė, R., Bekesiene, S., & Bagdžiūnienė, D. (2022). Reserve Soldiers' Psychological Resilience Impact on Sustainable Military Competences: On the Mediating Role of Psychological Skills (Effort, Self-Efficacy, Proactivity). *Sustainability*, 14(1), 1-12. https://doi.org/10.3390/su14116810.

Karatnyk, I., Hrechaniuk, O., & Pityn, M. (2015). Structure and content of competitive activity of 15-17-year-old badminton players. *Journal of Physical Education and Sport (JPES)*, 15(4), 834-837. DOI: 10.7752/jpes.2015.04128.

Koopmann, T., Faber, I., Baker, J., & Schorer, J. (2020). Assessing technical skills in talented youth athletes: A systematic review. *Sports Medicine*, 50(11), 1593–1611. https://doi.org/10.1007/s40279-020-01299-4.

Kusuma, D.W.Y., & Bin, W. (2017). Effect of Yoga Program on Mental Health: Competitive Anxiety in Semarang Badminton Athletes. *Jurnal Kesehatan Masyarakat*, 13(1), 121-130.

Lin, Z., Blazevich, A. J., Abbiss, C. R., Cochrane Wilkie, J., & Nosaka, K. (2023). Neuromuscular fatigue and muscle damage following a simulated singles badminton match. *European Journal of Applied Physiology*, 123(7), 1229-1240. https://doi.org/10.1007/s00421-023-05148-w.

Citation
Chen. T.F., Tongdecharoen, W., & Tasnaina, N. (2024). Construction of an Intensive Training Program for Badminton Reserve Players Before Team Selection Match. International Journal of Sociologies and Anthropologies Science Reviews, 4 (4), 175-186; DOI: https://doi.org/10.60027/ijsasr.2024.4371

Liu, H., Wang, W., He, Y., & Hastie, P. (2020). The Impact of Play Practice on Chinese Physical Education Pre-Service Teachers Badminton Content Knowledge. *The Asian Journal of Kinesiology*, 22(3), 17-23. DOI: https://doi.org/10.15758/ajk.2020.22.3.17.

Lu, Z., Zhou, L., Gong, W., Chuang, S., Wang, S., Guo, Z., Bao, D., Zhang, L., & Zhou, J. (2022). The Effect of 6-Week Combined Balance and Plyometric Training on Dynamic Balance and Quickness Performance of Elite Badminton Players. *International Journal of Environmental Research and Public Health*, 19(3), 1-8. https://doi.org/10.3390/ijerph19031605.

Majumdar, P., Khanna, G.L., Malik, V., et al. (1997). Physiological analysis to quantify training load in badminton. *British Journal of Sports Medicine*, 31(4), 342-345.

Mercader-Rubio, I., Ángel, N. G., Silva, S., & Brito-Costa, S. (2023). Levels of somatic anxiety, cognitive anxiety, and self-efficacy in university athletes from a Spanish public university and their relationship with basic psychological needs. *International Journal of Environmental Research and Public Health*, 20(3), 1-13. https://doi.org/10.3390/ijerph20032415.

Mun-Gyu, J., Oh, K.-R., & Choi, C. (2023). Effects of self-management behavior of closed sports athletes on concentration and competition state anxiety. Sport Mont Journal, 21(2), 25-32. doi: 10.26773/smj.230704.

Olmo Extremera, M., Olmedo Moreno, E., Cepero González, M., Zurita Ortega, F., & Padial Ruz, R. (2017). Validation of Resilience Scale (CD-RISC) *in elite athletes through a structural equation model.* Retos, 32, 96-100. ISSN (Edición impresa): 1579-1726. ISSN (Edición Web): 1988-2041.

Refoyo Román, I., Sampedro Molinuevo, J., & Sillero Quintana, M. (2009). The relationship between exercise intensity and performance in drills aimed at improving the proficiency, technical, and tactical skills of basketball players. *Revista Internacional De Ciencias Del Deporte*, 5(14), 1-10.

Selmi, O., Levitt, D.E., Ouergui, I., Aydi, B., Bouassida, A., Weiss, K., & Knechtle, B. (2022). Effect of intensified training camp on psychometric status, mood state, and hematological markers in youth soccer players. *Children*, 9(12), 1-14. https://doi.org/10.3390/children9121996.

Timoftea, D., & Titua, A. (2016). Study Regarding the Relationship between Coordination and Performance Capacity in Badminton. *In ICPESK 2015: 5th International Congress of Physical Education, Sports and Kinetotherapy*. DOI: http://dx.doi.org/10.15405/epsbs.2016.06.31.

Walankar, P.P., & Shetty, J. (2023). Effect of Plyometric Exercises Versus Speed Agility Quickness Training on Agility, Speed, Power, Dynamic Balance, and Reaction Time in Amateur Badminton Players. *International Journal of Physiotherapy and Research*, 11(3), 4524-4530. https://dx.doi.org/10.16965/ijpr.2023.124.

Citation
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